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COTTON PRODUCTION PRACTICES IN THE HIGH PLAINS AREA, 1947

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COTTON PRODUCTION PRACTICES IN THE HIGH PLAINS AREA, 1947

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Practices followed in producing cotton on farms of different size in the High Plains area are presented in this report. Typical cotton farms were studied in 1947 as a cooperative project of the Texas Agricultural Experiment Station and the Bureau of Agricultural Economics, USDA. This was part of a belt-wide analysis of practices in all major cotton-producing areas. Seven such areas were studied in Texas.

This publication is not intended for general distribution. It was prepared for agricultural economists and other professional workers engaged in similar studies in other states, and for county agents and farmers who cooperated in supplying information on cotton-production practices. A summarized report of practices in the seven Texas areas under study will be issued later to the press and public. These areas are: Corpus Christi, Coast Prairie, Rolling Plains, Lower Rio Grande Valley, High Plains, Northeast Sandy Lands and Blackland.

Over the past 20 years, cotton acreage in the State has gradually diminished, giving way to grain sorghum, small grains, forage and pasture crops which require less labor per acre than does cotton. In contrast to the State trend, cotton acreage has increased in the 10 counties in the cotton growing area of the High Plains designated as type-of-farming Area 3, Table 1. A number of former ranches have been broken up into farming units. The resulting increase in cropland usually has been planted to cotton and grain sorghum. Livestock numbers in the area have declined in recent years and on farms where cattle and hogs were once important, a substantial shift has been made from forage, feed and pastureland into cotton and grain sorghum. Total cotton production in the area has increased since 1928 because of the larger cotton acreage as well as the tremendous increase in the number of irrigated farms on which cotton is a major crop. It is estimated that in 1948, over 10,000 farm wells were available to irrigate more than a million acres of cropland on the High Plains, most of which was planted to cotton and grain sorghum plus a smaller acreage of alfalfa, wheat and some specialty crops such as potatoes, head lettuce, carrots and sugar beets.

Purpose of Study

This belt-wide study was designed to develop current information on details of production as practiced by farmers in important cotton areas to learn more about production requirements and rates of performance on typical cotton growing farms. At a future date it is proposed to conduct a similar survey and thus make possible some measure of changes which have taken place.

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Table 1. Estimated cotton acreage, yield and production, 1928-48 1/

Year	Cotton acreage		Production 2/		Yield per acre	
	Area 3	State	Area 3	State	Area 3	State
	1,000 acres		1,000 bales		pounds	
1928	1,250.3	17,409	214.8	5,105	82	141
1929	1,273.5	17,578	284.0	3,940	107	108
1930	1,231.9	16,689	229.3	4,037	89	116
1931	1,163.5	14,979	466.1	5,320	192	170
1932	1,275.6	13,592	470.6	4,500	177	159
1933	1,226.0	15,623	346.1	4,428	224	189 3/
1934	754.2	10,685	73.0	2,401	46	108
1935	911.0	10,964	272.0	2,956	143	129
1936	1,212.4	12,080	334.9	2,933	133	116
1937	1,556.7	12,769	886.1	5,154	273	193
1938	1,090.2	9,163	347.6	3,086	153	165
1939	973.3	8,874	339.3	2,846	167	157
1940	1,075.4	8,873	365.7	3,234	163	180
1941	1,030.0	8,119	482.3	2,652	225	161
1942	1,084.0	8,430	523.3	3,038	232	177
1943	1,072.5	7,915	455.5	2,823	204	171
1944	990.0	7,114	498.9	2,646	242	179
1945	399.9	6,029	102.3	1,794	123	143
1946	651.2	6,283	192.6	1,669	142	128
1947	1,849.0	8,426	882.7	3,431	228	196
1948	1,837.0	8,793	532.0	3,150	277	176

1/ Acreage in cultivation, July 1. Circular 117, TAES and Crop Reports, BAE, USDA.

2/ 500-pound gross weight bales.

3/ Based on planted acres less acres removed in 1933 reduction program.

Procedure

A representative sample of farms on which cotton was grown in 1947 was selected to provide a study of 3 size-groups. Farms with less than 100 acres of cotton were classed as small farms. Those with from 100 to 249 acres in cotton were designated as medium-sized farms and those with 250 or more acres were listed as large farms, Table 2. Cotton production under irrigation has increased on the High Plains to such an extent that in 1947 an estimated 20 percent of the acreage received some supplemental water. 1/ Of the 107 farms on which this report is based, 27 irrigated all or part of the cotton acreage. Data on irrigated farms was supplemented by similar information on 75 irrigated farms obtained as part of a more detailed farm management study of 1947 operations.

1/ Unpublished data assembled by W. F. Hughes, BAE.

Table 2. Acreage, production and tractor numbers, 1944 1/

Item	Size-group (acres in cotton)			
	Small (under 100)	Medium (100-249)	Large (250 and over)	Total
Farms reporting:				
Number of farms	6,485	2,859	498	9,842
Percent of total	65.9	29.0	5.1	100.0
Acres of cotton:				
Total number	316,422	370,547	217,824	904,793
Percent of total	35.0	40.9	24.1	100.0
Bales produced:				
Total number	181,776	192,114	107,401	481,291
Percent of total	37.8	39.9	22.3	100.0
Tractors:				
Percent of farms having	93.4	97.3	95.8	94.7

1/ Source: Special Cotton Report, U. S. Census, 1945.

Farm Organization

In Table 3, the land, livestock and labor organization is summarized by the 3 size-groups. "Other land" includes pasture, waste and land used for roads, lanes and the farm buildings. On the average, the percentages of total land listed as "other land" was 10, 6 and 10 for the 3 size-groups, respectively.

In addition to cotton, most farms had a relatively large acreage in grain sorghum; around 40 percent of all farms raised some wheat--generally on those farms with heavier soils. About a fourth of the farms had Sudan for roughage or pasture.

"No workstock," as reported by the cooperating farmers, was typical of the area. Practically all power is now furnished by tractors and trucks. Livestock numbers throughout the area were at a low point in 1947. This is indicated by the usual 5 or 6 total animal units on reporting farms. The usual number of milk cows on farms having cows, regardless of the size of the farm, was 2 head or about the number required to supply home needs. Milk cows were kept on about 85 percent of the small and medium-sized farms and on all of the large farms.

On the large farms, 2 available workers in the operator's family were usually supplemented by an additional family with 2 available workers on a hired or wage hand basis. On the small farms and most of the medium-sized farms, however, all regular work was performed by the operator, plus his own family to help. Only one of the small farm operators employed another family. Practically all chopping or hoe labor was hired on 50, 85 and 88 percent of the small, medium-sized and large farms, respectively, Table 4. In this table it also may be noted that snapping was performed by outside labor on most farms and that the majority of the regular farm work was performed by workers living on the farm. In this area, hired labor for hoeing usually is obtained from local sources. This is in contrast to the itinerant labor employed at harvest time which usually comes from the border counties, East Texas and elsewhere. Wage rates commonly used are shown in Table 5. Land tenure is indicated in Table 6.

Table 3. Land, livestock and labor organization by size of cotton enterprise 1/

Item	Size-group 2/								
	Small			Medium			Large		
	Farms rptg.	Average age	Usual range	Farms rptg.	Average age	Usual range	Farms rptg.	Average age	Usual range
	Pct.	Acres		Pct.	Acres		Pct.	Acres	
Land:									
Total land	100	213	100-320	100	309	150-400	100	654	320-1000
Cropland	100	191	100-250	100	291	150-350	100	589	320-960
Other land	94	22	15-30	76	18	10-25	76	65	30-100
Crops:									
Cotton	100	62	50-80	100	171	100-230	100	380	250-500
Grain sorghum	94	101	50-150	93	96	30-150	85	130	50-200
Wheat	41	24	15-60	38	18	10-50	42	47	15-85
Sudan	25	2	3-12	19	2	5-15	27	6	8-20
Other crops	16	2	2-10	17	4	3-20	27	26	10-60
	Farms rptg.	Average age	Usual	Farms rptg.	Average age	Usual	Farms rptg.	Average age	Usual
	Pct.	Number		Pct.	Number		Pct.	Number	
Livestock:									
Milk cows	87	2.8	2	83	1.8	2	100	2.1	2
Other cows	22	0.7	1	21	0.6	1	33	3.9	5
All other cattle	41	1.8	2	43	1.5	2	30	1.3	2
Brood sows	25	0.5	1	17	0.4	1	33	1.0	1
Other hogs	31	2.2	2	33	1.1	1	21	2.8	5
Hens and pullets	97	118.0	125	90	80.0	100	100	106.0	100
Other livestock	3	-	-	2	-	-	3	-	-
Animal units	100	5.9	6	95	4.0	5	100	8.4	6
	Farms rptg.	Average age	Usual	Farms rptg.	Average age	Usual	Farms rptg.	Average age	Usual
	Pct.	Number		Pct.	Number		Pct.	Number	
Labor:									
Operator:									
Families	100	1.0	1	100	1.0	1	100	1.2	1
Available workers	100	2.0	2	100	1.9	2	100	2.0	2
Hired or wage hands:									
Families	3	-	-	19	0.2	-	52	0.7	1
Available workers	3	-	-	19	0.4	-	52	1.5	2

1/ Average relates to all farms in sample. "Usual" range or number relates only to those farms reporting.

2/ Based on size of cotton enterprise: small size--less than 100 acres; medium-size--100 to 249 acres; large size--250 acres or more.

Table 4. Percentage of hired labor performed by workers not living on farm

Item	Size-group		
	Small	Medium	Large
	Percentage of farms		
Cotton chopping - hoeing:			
None hired, percent	25	5	-
1-25 percent	7	-	3
26-50 percent	9	5	6
51-75 percent	9	5	3
76-100 percent	50	85	88
Cotton snapping:			
None hired, percent	7	-	-
1-25 percent	3	2	-
26-50 percent	-	5	-
51-75 percent	9	5	-
76-100 percent	81	88	100
Regular farm work:			
None hired, percent	94	69	64
1-25 percent	-	5	15
26-50 percent	3	14	9
51-75 percent	-	7	6
76-100 percent	3	5	6

Table 5. Usual wage rates for specific operations

Item	Dollars
Cotton chopping - hoeing:	
Rate per day	5.25
Rate per hour	0.60
Snapping, including hauling:	
Rate per 100 pounds seed cotton	2.25
Regular farm work:	
Rate per day	5.00
Tractor drivers:	
Rate per day	5.50

Table 6. Land tenure

Item	Size-group			All farms
	Small	Medium	Large	
	Pct.	Pct.	Pct.	Pct.
Total land owned	55	37	26	34
Total land rented	45	63	74	66
Operators:				
Owners only	63	21	15	32
Tenants only	34	55	49	47
Combination owners - tenants	3	24	36	21

Planting Practices

The planting practices are summarized in Table 7 by size-groups and for all farms. All planting was done by drilling solid in the row. As planting to a stand was the customary operation, chopping was done on only 6 percent of the farms. On these, only a portion of the crop was chopped.

Eighty percent of the seed used was 1 or 2 years from the breeder. Planting seed usually was not delinted and only about a fourth was treated with Ceresan. Three-fourths of the farmers planted on 40-inch rows. A fifth planted on 38-inch rows.

Table 7. Cotton planting practices

Item		Size-group			All farms
		Small	Medium	Large	
Size of sample	(Acres)	2,677	7,201	13,469	23,347
Acres replanted	(Percent)	67	65	52	58
Farms using:					
Home-grown seed only	Do.	25	21	18	21
Purchased seed only	Do.	56	41	30	42
Both home-grown and purchased seed	Do.	19	38	52	37
Farms planting following types:					
Storm-resistant varieties only 1/	Do.	25	6	2	11
Normal-boll types only 1/	Do.	59	76	71	69
Combination of above types	Do.	16	18	27	20
Proportion of seed delinted:					
Home-grown seed	Do.	-	3	-	1
Purchased seed	Do.	7	9	2	5
All planting seed	Do.	5	4	1	3
Proportion of seed treated:					
Home-grown seed	Do.	18	22	25	22
Purchased seed	Do.	28	32	22	25
All planting seed	Do.	26	24	23	24
Rate of seeding:					
Delinted seed - ave. per acre	(Pounds)	11	12	10	11
Non-delinted seed - ave. per acre	Do.	20	20	20	20
Usual width of row	(Inches)	40	40	40	40

1/ Macha was the more popular variety of storm-resistant cotton. Half-and-Half was the most common variety of the normal-boll type.

Fertilizer, Poisons and Defoliants

Practically no commercial fertilizer was used on cotton on the High Plains. Only one farmer in this study used fertilizer in 1947; he used 3 tons of ammonium nitrate experimentally on 20 of his 250 acres of cotton.

Only 12 percent of the growers used insecticides of any kind on their cotton. Ninety percent of the insecticide used was DDT and sulphur, applied by plane on a little more than 1,000 acres.

For defoliation calcium cyanamid was applied by plane on one farm in the sample. This was dusted on 200 acres at the rate of 20 pounds per acre. A number of growers, along with the TAES substation at Lubbock, continue experimentations with defoliants. One that will give good results under a wide range of atmospheric conditions must be developed before the mechanical harvesting of cotton before frost will be practical. Normally, it is so dry in the area when cotton nears maturity, that ordinary methods of defoliation are ineffective. Chemicals now being used require enough moisture on the cotton leaves to hold the defoliant for a time. A defoliant applied as a spray may be the answer, but so far, the weight problem has not been overcome.

Machinery

The condensed inventory of field machinery is indicated in Table 8. Every farm had a tractor--generally two on the larger places. Less than half of the farms had breaking plows - moldboard, disk plows or oneways. All farms had 2 or 4-row lister-planters, cultivators and knifing equipment referred to as knives, slides or go-devils. Use of custom machines reduced the number of grain drills, combines, row-binders and haying equipment on some farms where there was need for such machinery. On the irrigated farms, leveling equipment or drags, siphons, ditchers and pumping engines were on hand but are not listed in Table 8. Although little poisoning was done in 1947, nearly one-fourth of the growers owned dusters, usually 6-8 row machines. In this area, where most of the cotton is harvested by crews of itenerant labor, hauling is usually included in the harvesting arrangements. However, extra trailers are provided by the grower. Many trailers are pulled by automobile, truck or pick-up to the gin. On smaller farms trailers usually were of 1 or 2 bale capacity. On the larger farms they generally were 2 or 3 bale trailers.

The number and age of tractors, by size-groups, are summarized in Table 9.

Labor and Power Requirements

The data indicate no appreciable differences in the rates of performance for machines of the same size on farms in the various size-groups heretofore listed. More 2-row equipment was used on farms in the small-sized group and more 4-row equipment was usually available on the larger farms, Table 8.

There are recognized differences in requirements on irrigated farms as compared with dry-land farms. In Table 10, therefore, requirements are summarized for irrigated and dry-land farms using 2 and 4-row equipment, regardless of the size of the cotton enterprise.

Attention is called to the slight difference in total man and tractor hours required on farms where 4-row or 2-row equipment was used. An advantage of less than 1½ hours of man labor per acre in favor of 4-row equipment occurred on both the irrigated and dry-land farms. About 80 percent of the man-labor was used in chopping, hoeing and snapping. On irrigated farms an additional 14 percent of all labor was required to water the crop, so only a small amount of total time would lend itself to savings brought about by the use of different sized equipment. Observation, however, reveals that on farms where 4-row equipment is used, the same sized labor force can handle a much larger acreage. A real advantage that does not appear in the tabulation is that with 4-row equipment it is possible to do in a shorter time an essential operation such as planting or cultivating. Such small savings in time may mean the difference between a good or poor stand or good or poor weed control.

This factor of "timeliness" accounts in large measure for the trend toward 4-row equipment on both irrigated and dry-land farms.

Table 8. Field machinery 1/

Item	Size-group								
	Small			Medium			Large		
	Farms rptg.	Average	Usual	Farms rptg.	Average	Usual	Farms rptg.	Average	Usual
	Pct.	Number		Pct.	Number		Pct.	Number	
Pickups, 1/2 - 3/4 T.	22	0.2	-	29	0.3	-	33	0.3	-
Trucks, 1 1/2 - 2 T.	3	-	-	2	-	-	27	0.3	-
Tractors	100	1.0	1	100	1.3	1	100	2.0	2
Breaking plows	34	0.3	-	43	0.4	-	58	0.5	1
Disk harrows	9	0.1	-	7	0.1	-	27	0.3	-
Section harrows	47	0.5	-	43	0.4	-	36	0.4	-
Lister-planters:									
4-row	31	0.3	-	57	0.7	1	97	1.6	2
2-row	72	0.8	1	43	0.5	-	9	0.1	-
Cultivators:									
4-row	28	0.3	-	64	0.7	1	94	1.5	2
2-row	75	0.8	1	43	0.4	-	9	0.1	-
Knifing equipment	78	1.2	1	86	1.5	2	94	2.4	3
Scratchers	9	-	-	12	0.1	-	21	0.2	-
Grain drills	22	0.2	-	12	0.1	-	18	0.1	-
Combines	47	0.5	-	36	0.3	-	76	0.8	1
Row binders	22	0.2	-	19	0.2	-	21	0.2	-
Stalk cutters	56	0.6	1	83	0.9	1	97	1.1	1
Trailers	100	1.5	2	100	1.9	2	100	2.4	3
Machine strippers	13	0.1	-	33	0.4	-	70	0.7	1
Hoeme or chisels	6	-	-	24	0.2	-	30	0.3	-
Poison dusters	13	0.1	-	29	0.3	-	27	0.3	-

1/ Average relates to all farms. "Usual" relates to equipment generally used on farms where more than half the reporting farms had such items.

Table 9. Number and age of tractors

Size-group	Age in years							
	1 - 3		4 - 6		7 - 9		10 and over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Small	6	18	6	18	12	35	10	29
Medium	17	31	7	13	15	27	16	29
Large	15	23	21	32	17	26	12	19
All farms	38	25	34	22	44	28	38	25

Table 10. Usual labor and power requirements per acre on irrigated and dry-land farms

Operation	Irrigated cotton						Dry-land cotton					
	4-row equipment			2-row equipment			4-row equipment			2-row equipment		
	Times over	Hours per acre		Times over	Hours per acre		Times over	Hours per acre		Times over	Hours per acre	
		Man	Tractor		Man	Tractor		Man	Tractor		Man	Tractor
Cut stalks	1.0	.17	.17	1.0	.25	.25	1.0	.17	.17	1.0	.25	.25
Hoeme, chisel or disk	.5	.18	.18	.5	.20	.20	.3	.11	.11	.1	.06	.06
Flatbreak or oneway	.5	.26	.26	.2	.10	.10	.2	.10	.10	.1	.05	.05
List or bed	1.2	.35	.35	1.2	.60	.60	1.0	.42	.42	1.0	.42	.42
Knife	.7	.15	.15	.7	.20	.20	1.0	.18	.18	1.0	.20	.20
Irrigate 1/	.8	1.78	.10	.8	1.80	.10	-	-	-	-	-	-
Plant	1.7	.40	.40	1.7	.70	.70	1.5	.39	.39	1.5	.72	.72
Knife	1.7	.38	.38	1.7	.68	.68	1.5	.36	.36	1.5	.64	.64
Cultivate	3.8	.85	.85	3.4	1.45	1.45	3.0	.75	.75	3.0	1.20	1.20
Chop or hoe	1.6	4.70	-	1.6	4.70	-	1.5	3.75	-	1.5	3.75	-
Irrigate 1/	2.0	3.70	.30	2.0	3.70	.30	-	-	-	-	-	-
Total, before harvest	-	12.92	3.14	-	14.38	4.58	-	6.05	2.48	-	7.29	3.54
Hand snap	1.9	23.65	-	1.9	23.65	-	1.7	15.50	-	1.7	15.50	-
Machine strip	.5	.70	.47	.5	.70	.47	.3	.33	.20	.3	.33	.20
Haul to gin 2/	-	1.25	1.25	-	1.25	1.25	-	1.10	1.10	-	1.10	1.10
Total harvest	-	25.60	1.72	-	25.82	1.72	-	16.93	1.30	-	16.93	1.30
Total, all operations	-	38.52	4.86	-	40.20	6.30	-	22.98	3.78	-	24.22	4.84

1/ Includes some leveling, ditch building and filling in addition to actual watering.

2/ Hauling by truck or in tractor, pick-up or auto-pulled trailers.

Use of the more common implements is indicated in Table 11. Since land in row-crops does not require breaking, the use of plows and oneways was limited to those farms where small-grain land or new ground was prepared for cotton. Oneways with from 5 to 10-foot cuts were used, but the common widths were either 6 or 8 feet. Only 2 farms used mold-board plows to break land.

Table 11. Use of equipment

Operation and implement used	Farms reporting	Cotton acreage covered	Times over	Acres covered per 10 hr. day	Hours per acre once over	
					Man	Tractor
	Percent	Percent	No.	No.	Hours	
Breaking:						
6-8 foot oneways	10	6	1.0	19	0.52	0.52
Other oneways	8	6	1.0	26	0.38	0.38
Chiseling:						
Hoeme or chisel attach.	22	25	1.1	18	0.56	0.56
Harrowing:						
2-3 sec. harrows	5	2	1.0	50	0.20	0.20
Bedding:						
2-row listers	33	16	1.1	24	0.42	0.42
3-row listers	51	65	1.2	32	0.31	0.31
4-row listers	16	19	1.1	42	0.24	0.24
Pre-plant cult.:						
Knifeing						
3-row knives	62	66	1.8	45	0.22	0.22
4-row knives	13	12	1.8	56	0.18	0.18
Cutting beds						
4-row stalk cut.	7	7	1.2	58	0.17	0.17
5-row stalk cut.	6	3	1.0	88	0.11	0.11
Planting:						
2-row lister-planters	35	16	1.4	21	0.48	0.48
4-row lister-planters	65	84	1.6	38	0.26	0.26
Cultivating:						
2-row cultivators	36	17	3.0	25	0.40	0.40
4-row cultivators	65	83	3.0	40	0.25	0.25
2-row knives	37	35	1.5	23	0.43	0.43
4-row knives	53	60	1.6	42	0.24	0.24
Sec. harrows, scratchers	16	12	1.1	53	0.19	0.19
Harvesting:						
2-row strippers	43	27	1.0	17	1.18	0.59
Stalk disposal:						
2-row stalk cut.	13	19	1.0	40	0.25	0.25
4-row stalk cut.	50	52	1.0	72	0.13	0.13
5-row stalk cut.	9	10	1.0	89	0.11	0.11

Sub-surface tillage was practiced on 25 percent of the cotton acreage. Hoeme plows or chisel attachments on tool-bars were used for this operation which is increasing in popularity, especially on irrigated farms. When weather and other farm work permitted, some farmers on irrigated land cut stalks, chisled and bedded land soon after harvest. Land so prepared was thus ready early for pre-planting watering. For the most part, however, and especially on dry-land farms, seedbed preparation was delayed as long as possible in the spring to retard damage from blowing and to conserve soil moisture.

The amount of cultivation of beds before planting varies with the season, the growth of weeds and condition of the top-soil. Many home-made "scratchers," "weeders" and cultivator attachments as well as stalk cutters are used to go over the land rapidly to break the crust and destroy early weed-growth before planting time.

Planting to a stand was practiced on all farms. Neither check-row planting nor cross-plowing was done. No mechanical choppers were on inventory on the farms studied. Hand chopping was limited to irrigated land and then only on areas where the stand came up too thick.

Harvesting Practices

Cotton harvesting practices are summarized in Table 12. No significant differences were found in practices followed in harvesting cotton on irrigated as contrasted with dry-land farms. Nor were there differences in harvesting practices or results obtained on farms of various size or on farms using 2-row or 4-row equipment. In other words, when it comes to harvesting, methods used did not differ much among farms in the area. It is significant that in 1947, yields on the irrigated farms averaged more than twice as much as on the dry-land farms. On all farms, most of the crop was hand-snapped and practically all snapping work was hired. The turnout of both lint and seed was slightly higher when harvested by hand than by machine.

Table 12. Cotton harvesting practices

Item		Irrigated farms	Dry-land farms	All farms
Acre yield of lint	(Pounds)	418	200	269
Harvesting practices:				
Hand-snapped cotton				
Bales snapped	(Percent)	96	90	93
Snapped bales hired snapping	Do.	99	98	98
Seed-cotton per 500-lb. bale	(Pounds)	1789	1879	1856
Cotton seed per 500-lb. bale	Do.	697	722	715
Turn-out, lint	(Percent)	28	27	27
Turn-out, seed	Do.	39	38	38
Machine stripped cotton				
Bales harvested	(Percent)	4	10	7
Seed-cotton per 500-lb. bale	(Pounds)	2050	2101	2089
Cotton seed per 500-lb. bale	Do.	709	738	731
Turn-out, lint	(Percent)	24	24	24
Turn-out, seed	Do.	35	35	35

Combine Grain Sorghum

As indicated in Table 3, grain sorghum was a crop of major importance in the area. Grain sorghum acreage on the farms studied was about half as much as the cotton acreage. Most of the sorghums were of the combine-type and were harvested for grain. Martin and Plainsman were the predominating varieties. Yields averaged 1,030 pounds per acre, most of which was sold. In all cases, seed was purchased for planting and had been treated with Ceresan.

Seedbed preparations for grain sorghums were practically the same as for cotton. On only two of the irrigated farms was water applied before planting. Cultivation after planting was done with 2 or 4-row knife-slides or "go-devils" as well as with cultivators. On the average, fields were knifed 1.7 times and cultivated 1.6 times. A portion of the acreage on only one-fourth of the farms was hoed to eliminate weeds.

A 2-row combine was the common size used whether harvesting was done by the farmer or contracted for. About half of the growers hired their grain hauled to the elevator. Others used trucks or used trailers pulled by a car.

About 4 hours each of man and tractor time was required per acre of grain sorghum when 4-row equipment was used on dry-land farms. On dry-land farms where 2-row equipment was used, the average labor requirement was 5.5 man and tractor hours per acre. On the irrigated farms, both 2-row and 4-row-equipped farms, about 4 additional hours of man labor and .3 hours more of tractor work were required.

Possibilities for Further Changes in Cotton Production Practices

No other area in the United States produces cotton at as low a cost per acre as the High Plains. With large, level fields usually free of rocks and relatively clean of weeds, production requires less man and tractor hours, less seed, fertilizer and insecticides than are needed in other large cotton growing areas. Irrigated cotton calls for a higher investment in land, equipment and other production costs than does cotton grown on dry-land farms, but increased yields on most irrigated farms tend to offset the additional costs. There is a definite trend toward the use of 4-row equipment and the one big remaining man-labor requirement--that of harvesting the crop, is being reduced by the increased use of mechanical cotton strippers. Full reliance upon machines to harvest cotton in the area must await the development of a practical method of assuring defoliation. This would permit harvesting much of the crop before mid-November when bad weather generally sets in and the basis-price usually drops because of lower grades.

Gins in the area are usually well equipped to handle the rougher harvested cotton. Improvements continue to be made and there is genuine interest in better methods of ginning machine harvested cotton.

Some advantage of low cost production is lost by the relatively low grade and short staple of lint produced. For the 1947-48 season, about 90 percent of the cotton grown in the area was 7/8-inch staple or less. About 70 percent was graded as white cotton and 25 percent spotted. Only 15 percent of the total bales ginned was above middling grade. Cotton breeders and the Lubbock experiment station have already provided a storm-resistant type of plant that does especially well on mechanized farms. Progress is being made on improvements that produce bolls higher on the plant to permit a better job of mechanical stripping. Plants that leave less

"pin-trash" in the seed cotton and other desirable selections are among the characteristics sought by breeders. Resistance to angular leaf-spot is another accomplishment brought about through selection at the Station. This characteristic, of course, is desirable regardless of the method used in harvesting the crop. Longer staple, greater tensil strength and generally higher grades - and the resultant higher prices are items of interest to growers and processors all along the line.

To date, weed control has not required a great amount of attention. This operation could, however, become a significant cost factor. The Lubbock station has decreased man-labor requirements for weed control by 60 percent over a 3-year period through the use of the rotary hoe and is now working on mechanical choppers to further reduce hoe work.

There are probably enough gins in the area to handle a normal crop in a satisfactory manner. This is not the case, however, in exceptionally good years. During such years, loaded trailers accumulate on gin-yards and a considerable amount of seed cotton is piled on the ground at the farms awaiting trailers and ginning. This situation would be very serious if defoliation and early machine harvest should become the common practice. Then some method of practical farm storage or holding of cotton would seem to be necessary to provide a more orderly program of ginning. Considerable research and experimentation on this possibility seems advisable.

Another possibility for improvement in producing cotton lies in the field of classing. Most gins put up a good looking bale, then have it immediately torn up by sampling from both sides. Some contend that this happens after most growers lose possession of the bale, so farmers have but little interest in this marketing problem. However, until cotton reaches the ultimate consumer, a grower inevitably has handling charges and costs reflected in the price he gets for the raw product. Pre-pressbox sampling can be done satisfactorily. And mechanical classing is not an impossibility. Both processes, if perfected and accepted by the trade, would benefit the grower.

So possibilities are numerous for further changes in production practices in the High Plains. To summarize:

1. Mechanized cotton production may become general when satisfactory defoliation can be relied upon year after year.

2. The shift from 2-row to 4-row equipment will continue as the size of farms is adjusted, principally to allow a given labor force to handle a larger acreage and to assure more timely operations.

3. Improvement in cotton plant characteristics better suited to mechanical harvesting will aid farmers in making the shift to machine harvesting.

4. As experience develops in the area, more economical use of available water for cotton production may be expected. It may thus be possible to increase the proportion of cotton grown under irrigation beyond the present percentage even though the available water supply declines; a possibility that already has many residents alarmed.

5. With production under irrigation continuing over the years, greater use may be made of sub-surface cultivation with Hoeme plows and chisels.

6. As agriculture in the area develops and fields continue to be cultivated, it is reasonable to anticipate more weeds and insects, therefore, more practices to combat them. Also fertilizers will probably be used when soil fertility declines.

7. Some farm storage of cotton is a possibility if harvesting by machines within a relatively short season becomes a reality.

8. Greater uniformity in the use of cotton varieties together with improved techniques in grading and marketing cotton could materially affect the income to growers.

This is not a complete list of possible changes in the area. Some of them are certain to occur while others must await the time when enough farmers agree that they are highly desirable. Cotton production on the High Plains is destined to become an even more important part of the agriculture of Texas than it is today.

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